s18quiz: EXP LOG (SLTN v292)
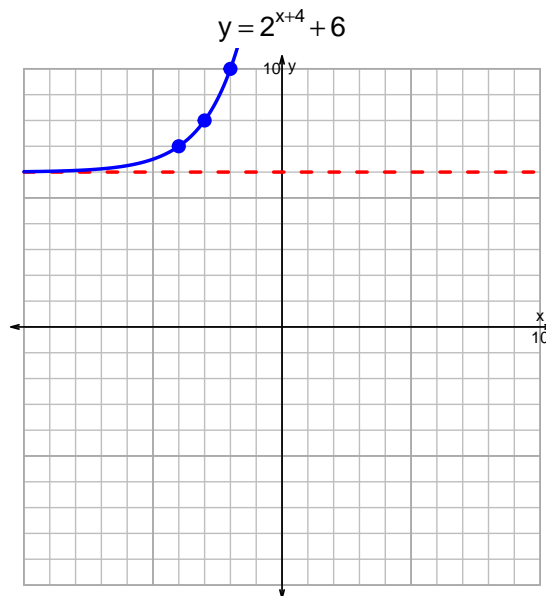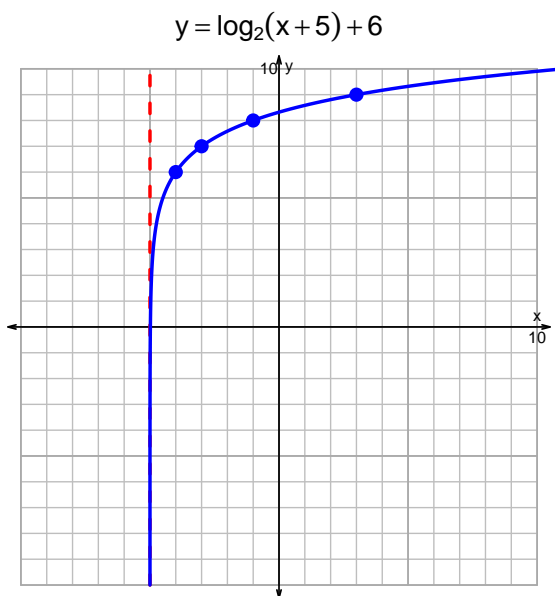
1. Graph $y = \log_2(x+5) + 6$ and $y = 2^{x+4} + 6$ on the grids below. Also, draw any asymptotes with dotted lines.

2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-29 = \left(\frac{-4}{7}\right) \cdot 2^{5t/3}$$

Divide both sides by $\frac{-4}{7}$.

$$\frac{29 \cdot 7}{4} = 2^{5t/3}$$

Take log, base 2, of both sides.
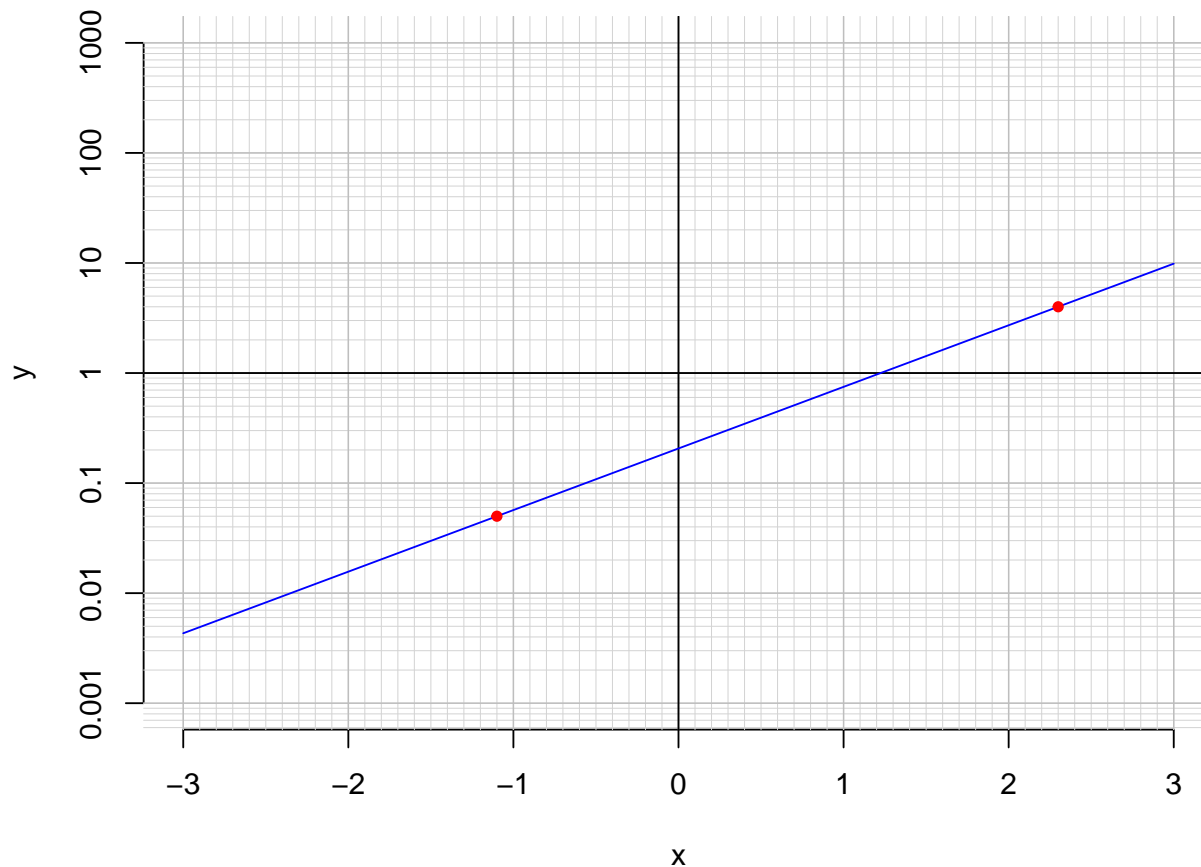
$$\log_2\left(\frac{29 \cdot 7}{4}\right) = \frac{5t}{3}$$

Divide both sides by $\frac{5}{3}$.

$$\frac{3}{5} \cdot \log_2\left(\frac{29 \cdot 7}{4}\right) = t$$

Switch sides.

$$t = \frac{3}{5} \cdot \log_2\left(\frac{29 \cdot 7}{4}\right)$$

3. An exponential function $f(x) = 0.206 \cdot e^{1.29x}$ is graphed below on a semi-log plot.

a. Using the plot above, evaluate $f(2.3)$.

$$f(2.3) = 4$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{1.29} \cdot \ln\left(\frac{x}{0.206}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.05)$.

$$f^{-1}(0.05) = -1.1$$